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ABSTRACT

A rationale for outdoor education, 36 annotated references, (dated 1972-1981), glossary, and recommendations are included in this study of the educational relevance of outdoor education. Information is organized around three questions: (1) Does outdoor education promote a more solid grasp of the concepts than a similar environmental curriculum taught in a traditional classroom setting? (2) Does outdoor education provide and promote an increased concept of self-awareness and self-esteem along with the other areas of the affective domain in the individual student? (3) What standard evaluative procedures and methods were used to ascertain the effectiveness of the outdoor educational curriculum? Eleven annotations address the first question, 13 address the second, and 12 address the third. The summary points out trends in findings of the annotated works. The conclusion attempts to answer each of the three organizing questions, noting lack of consensus on the question of outdoor education's impact on the cognitive domain, general agreement that outdoor education promotes affective development, and lack of standard ways to evaluate outdoor curriculum. Five recommendations for further research include expansion of outdoor education programs, inclusion of clear and definable objectives to accompany outdoor curriculum, and more research to study the impact of outdoor education on the cognitive domain. A four-page bibliography concludes the document. (JHZ)

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AN ANNOTATED BIBLIOGRAPHY OF ABSTRACTS, DOCTORAL DISSERTATIONS AND JOURNALS DEALING WITH THE UTILIZATION OF THE OUTDOORS TO ENRICH THE CURRICULUM AND TO PROMOTE MORE EFFECTIVE LEARNING IN THE ELEMENTARY AND SECONDARY STUDENT

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INTRODUCTION

In order to live within the evironment, society should have knowledge, appr ciation, care and concern for the natural forces and l ings. There is no better way to foster these positive attitudes than with children, who have an innate sense of curiousity and wonder. They are naturals for the outdoors and we as adults only have to promote, foster, strengthen and encourage this talent! Sharing nature and the environment with children can be easy and exciting, especially when we have enthusiasm ourselves for learning about the natural environment. (Sisson 1982)

Textbooks, field guides and other sources of written knowledge are helpful in learning about the outdoors, but to know, appreciate, and understand the outdoor world, we must experience it by seeing, touching, smelling, hearing, and sometimes even tasting. Allowing our innate senses to respond to the natural stimuli increases our sensitivity to the environment and our feelings of being a part of nature. Added benefits are gained by sharing different observations and knowledge when participating with a class or a group. It is often surprising how the most poignant question involves the whole group in working out a solution to the problem. Education of the student should follow the old axiom: "I hear and I

forget; I see and I remember; I do and I understand!" By educating our youth according to that simple axiom, educators must utilize the natural resources available and make the outdoors a viable and integral part of their curriculum.

STATEMENT OF THE PROBLEM

In develo or educational curriculum for the elementary school student, certain criteria and objectives must be met in order for the activitites to be of a learning nature. The curriculum should not only allow students to learn about their environment, ecosystems and their natural surroundings, but should also allow the student to learn about themselves, their interactions with others, and to develop a basic literacy of the environmental processes and concepts.

Outdoor education, environmental education and nature education, all interrelated terms, are particularly beneficial to elementary students and early adolescents because the activities promote problem solving, risk taking, leadership training, self-confidence and teamwork along with the necessary cognitive skills. These characteristics are attributes in which adolescents are still in the stages of developing.

PURPOSE OF THE STUDY

Educators are accountable for the education of the students according to the criteria set forth by a predetermined curriculum. Both educators and the curriculum must provide a means for adaption and improvement according to the changing needs of the society and the student. The outdoors can greatly enhance the instruction of teachers. The outdoors is a vast and complex system in which one could spend an entire lifetime in study. The young mind is full of curiousity and unanswered questions. Youth as well as adults need to interact responsibly with their environment; conserving natural resources, preventing pollution, etc. Learning is the result of experience and any system which promotes a hands-on and experiential approach to learning is bound to promote and foster a more joyful and positive attitude towards learning. Reading and memorization of material written and experienced by others is helpful in the educational process and can be a useful instrument, when utilized wisely, however, in order to fully grasp the concepts and understand the varied and different ecosystems, cycles, processes and environments surrounding us, one must become involved in the experience. Implementation of an outdoor educational program is one way in which these needs can be met.

ORGANIZATION OF THE STUDY

This study evaluates the relevance of outdoor education and how it relates to the cognitive and affective levels of student achievement, by addressing three important questions. 1) Does outdoor education promote and develop a more solid and fundamental grasp of the concepts than a similar environmental curriculum taught in a traditional classroom setting? 2) Does outdoor education provide and promote an increased concept of self-awareness and self-esteem along with the other areas of the affective domain in the individual student? 3) What standard evaluative procedures and methods were used to ascertain the effectiveness of the outdoor educational curriculum?

The first question establishes a definite relationship between outdoor education and student cognitive achievement. The second area will ascertain a relationship between outdoor education and student affective achievement. The final section of the study describes the different methods and instruments used to evaluate the objectives, relevance, and curriculum content of an outdoor education curriculum.

LIMITATIONS OF THE STUDY

One of the major problems in researching outdoor education is the ambiguity of the definitions in this area. Outdoor education has different meanings to different researchers. An additional problem was the scarcity of relevant and pertinent material related strictly to either the cognitive, affective, psychomotor, or the evaluative domains. Researchers tended to combine all four domains and thus most abstracts, dissertations, and articles were interconnected.

Another major problem in researching this area was the discrepencies or lack of clarification in the areas being taught. In this study, there were a definite deficiency in listing either the objectives, concepts, or processes being taught. One question raised after completion was, why exactly do we take our students outside? What specific reasons do we have for teaching outdoors? These questions were not readily answerable from the abstracts studied. Even some of the dissertations were not clear in this area.

GLOSSARY

academic achievement-- "knowledge attained or skills developed in the school subjects, usually designated by test scores or by marks assigned by teachers, or by both." (Good, p.7)

affective-- "acquistiton of feelings, tastes, emotion, will, values and other aspects of social and psychological development gained through feeling rather than intellectualization." (Page and Thomas, p.14)

cognitive-- "acquisition by the learner of facts, concepts, and principles through intellectualization." (Page and Thomas, p.70)

ecology-- "the field of biology which deals with the mutual relationships to his culture and biophysical environment." (Good, p.201)

environmental education--"recognition and clarification of the values, attitudes, and concepts concerned with man's relationships to his culture and biophysical environment." (Good, p.214)

experiential learning--"knowledge acquired from experience of work and life as against formal academic study. The term is used particularly of experience recognized as qualifying a student for life experience credits." (Page and Thomas, p.128)

interdisciplinary--"involving professional groups from various subject-matter fields." (Good, p.311)

interdisciplinary approach--"a method of study by which experts, or the best research workers from many different fileds of learning, are brought together in the examination of a particular problem that is relevant to all their approaches: for example, a child-development problem may be studied by a team composed of psychologist, doctor, social phychologist, educator, psychiatrist, and sociologist." (Good, p.311)

outdoor education--"an approach to teaching and a process through which learning experiences in all areas of the educational curriculum are provided and in which natural, community, and human resources beyond the traditional classroom are utilized as a motivation for learning and a means of broad curriculum enrichment and vitalization; direct firsthand learning opportunities involve the teacher and student in ecological explorations of the environment to develop and/or improve the knowledge, understanding, attitude, behavior, appreciations, values, skills, and stewardship responsibility of the learner; education in, for, and about the physical and biotic environment is emphasized in order to achieve a wide variety of educational goals." (Page and Thomas, p.404)

self-concept--"the individual perception of himself as a person, which include his abilities, appearance, performance in his job, and other phases of daily living." (Good, p.524)

self-esteem--"the judgement and attitude an individual holds toward himself." (Good, p.525)

ANNOTATIONS

DOES OUTDOOR EDUCATION PROMOTE AND DEVELOP A MORE SOLID AND FUNDAMENTAL GRASP OF THE CONCEPTS THAN A SIMILAR ENVIRONMENTAL CURRICULUM TAUGHT INDOORS?

DeBlanc, Jefferson J. "A Comparitive Study of Science Academic Acheivement of Senior High School Participants and Non-Participants in an Outdoor Education Center- St. Martin Parish." DA. 34 (1973), 3175A (McNeese State University)

DeBlanc's study was designed to see if there were any significant differences in academic achievements after participation in a series of mini-courses at an outdoor education center. A control group remained in the classroom.

Summaries of the finding which included pre and post testing by the Metropolitan Achievement Test, seemed to indicate that the group of students involved in the outdoor education program gained significantly more in science achievement than the classroom group.

Morton, Carol Sue, Ph.D. "The Influence of a Winter Interdisciplinary Outdoor Education on Middle School Students Attitudes and Knowledge About the Outdoors." DA. 41 (1981), 3518A (University of Akron)

The purpose of Morton's study was to provide evidence that a Winter Interdisciplinary Outdoor Education program made significant positive improvements on the attitudes and cognitive knowledge about environmental concepts. Morton's hypothesis proposed that a group of students learning in an ROE experience would make greater gains than a group of students learning in a normal school setting.

The Millward-Ginter Outdoor Attitude Inventory was given to both groups with form A given as a pretest and form B as a posttest. One hundred sixty-seven students comprised the experimental group which attended Hiram House Camp while the control group of eighty-seven students remained in the classroom.

After computation and analysis of all scores, the results were as Morton predicted, the experimental group made significantly greater gains than the control group.

Chrouser, William Harvey, Ed.D. "A Comparison of the use of Outdoor vs. Indoor Laboratory Techniques in Teaching Biology to Prospective Elementary Teachers." DA. 31 (1970), 6448A (University of Northern Colorado)

Chrouser compared the conventional indoor laboratory and the outdoor laboratory approaches to biology, using preservice teachers. Some of the effects compared were: understanding of the social aspects of science, understanding of science as a process, achievement in selected biological concepts and objectives, and critical thinking.

Two groups, a control group of teachers taught indoors and an experimental group taught outdoors, were each given pre and post tests on the aforementioned objectives and concepts. Analysis was made of the collected scores to learn if the two approaches had different or similar impacts.

Chrouser found that significant differences occurred in three areas: (1) science and technology and the interaction with society (2) nature of the scientific enterprise and (3) social responsibilities of science. The experimental group showed significant differences in gains in the areas of specific biological objectives and principles, and in understanding the scientific processes. No differences were found in the areas of critical thinking and biological principles in general.

Chrouser concluded that the outdoors should be used as a classroom because of the positive effect not only on the affective domain but also because of the positive effect on the cognitive domains.

Peck, Richard Allan. "A Study Comparing Outdoor, Indoor and Outdoor-Indoor Settings for Teaching Specific Environmental Education Objectives." DA. 36 (1975), 4233A (University of North Carolina at Chapel Hill)

Peck's premise was that students who are involved in an outdoor education class, given certain specific objectives, can learn more effectively than students who are taught in a regular indoor setting or who are taught in a combination of the two. Three different environmental classes were taught with predetermined cognitive and affective objectives.

The results did show that the outdoors is an effective tool for teaching environmental education. Cognitive test scores for the outdoor group showed a significant increase while the other two groups did show an increase but not as dramatic. Affective test scores showed a shift to a more positive attitude with the outdoor and indoor groups but indicated a slight negative shift in the combination group.

Marcus, Joyce Bukaresky. "The Effects of a Camp Program on the Reading Abilities and Attitudes of Educationally and Socioeconomically Disadvantaged Children." DA. 38 (1977), 3934A (Fordham University)

Marcus attempted to determine if there were any significant differences in the reading abilities and reading attitudes of disadvantaged children who attended a two week summer camp program which emphasized reading following a six week summer school program. Five hundred predominantly Black and Puerto Rican boys and girls from New York city were involved in the program.

Analysis of the Metropolitan Achievement Test data, immediately following the study, indicated no significant differences in reading in either groups. However, after a 9 month hiatus, a post post test was again administered which showed significantly higher word knowledge, comprehension, and total reading scores for members of the experimental camping group than members of the control group.

Hoaley, Edward Wendell, Ph.D. "A Comparison of Two Methods of Instruction in Environmental Education." DA. 35 (1975), 3392A (University of Maryland)

Hoaley's comparison of two methods of environmental instruction involved the use of a field study and a teaching unit employing a three screen slide tape (AMI) of the same objectives and concepts as the field study.

Three hypotheses were developed for the study before actual implementation by four groups of one hundred students, twenty-five students per group, one group being a control.

After completion of instruction, all students were required to take a retention test representative of all material taught by both methods. After analysis of all results, the three hypotheses were then proven accurate in their original assumptions. Further benefits were also noted with evidence of a higher interest level in both programs, faster learning times in the AMI program and more rapid response by students involved in the field following the presentation of the AMI program.

Brady, Eugene Ralph. "The Effectiveness of Field Trips Compared to Media in Teaching Selected Environmental Concepts." DA. 33 (1972), 4196A (Iowa State University)

Brady's study was concerned with the effects upon student achievement and their attitudinal changes toward the environment after completion of two different modes of environmental instruction.

Students were randomly assigned to either a field trip group or a media control group. The study contained three units and achievement tests were administered to gather data.

Brady found that both field trips and media were effective methods for teaching environmental concepts, however, there were no significant differences between either instructional mode. Both methods showed positive gains in attitude toward the environment.

Konle, Mary Caroline. "The Effects of a Short-Term, Reading-Study Program Involving Some Camp-Style Living on Reading Achievement, Self-Concept and Attitudes." DA. 38 (1976), 612A (Marquette University)

Konle expected that a close friendly, teacher-student relationship, used in an outdoor camp program, would result in significantly higher reading scores and self-concept attitudinal gains. The areas studied included reading skills, attitudes toward reading and self-concept.

Forty-six freshman, who scored at the thirty-six percentile or lower on the Iowa Silent Reading Test, participated in the camp program which consisted of a teacher, former teacher, and an aide working and living with groups of six or seven students at a time. After one week of instructional time in a rural setting, the program continued for six additional weeks in a regular school atmosphere. This was followed by a weekend outing.

After posttesting and analysis of data, there were no significant differences between the experimental and control groups. A few individual students in the experimental group did make rather significant gains plus all students, staff and parents attested to the positive value of the treatment.

Johnson, Gussie, D.Ed. "A Comparison of Eighth Grade Pupil's Achievement in Selected Portions of Biology Using the Traditional Indoor Environment and the Experimental Outdoor Environment Taught From an External Morphological Approach." DA. 38 (1977), 2692A (Pennsylvania State University)

Johnson's major purpose was to see if the outdoor classroom could be a viable and workable alternative to the standard approach of classroom instruction. Data were collected from selected areas of Biology to determine the different achievement levels of an eighth grade group, composed of one hundred twelve students. Four modes of instruction were utilized: (1) outdoor botany and indoor zoology, (2) indoor botany and outdoor zoology, (3) indoor botany and indoor zoology, and (4) outdoor botany and outdoor zoology. Instruction for the control groups was done indoors while the experimental groups were taught outdoors.

After analysis of all data, Johnson reported no significant gains or decreases and that outdoor education was comparable to that of the traditional indoors mode of instruction. Consistent modes of instruction, ie. indoor botany and indoor zoology, did produce higher gains than a mixed mode of instruction.

Westcott, Dale Carlton, Ed.D. "A Comparison of Two Methods of Teaching Environmental Education." DA. 36 (1975), 807A (University of Maryland)

Westcott compared the cognitive achievement and attitudinal feelings of seventh grade students toward environmental issues by utilizing two different educational approaches. The methods compared were an interdisciplinary approach and a discipline centered approach. Also determined was the effect an attitude pretest had on posttest scores for the same seventh graders.

Cognitive achievement of both groups showed no significant difference between either teaching approach. The pretest interdisciplinary approach was found to produce more positive attitudinal changes than the discipline centered approach. All pretested subjects also showed more positive attitudes the environment than those not tested. The same students were also noted to show a more positive attitude than the discipline centered group.

Howie, Thomas Richard, Ph.D. "The Effectiveness of Outdoor Experience Versus Classroom Experience in Learning the Cognitive Dimensions of Environmental Education." DA. 34 (1972) 122A (George Washington University)

The primary purpose of this dissertation was to compare the effects of teaching environmental education in two different settings. One group of fifth graders participated in an outdoor educational program while the other group was instructed in the traditional classroom setting. A third group was instructed both outdoors and indoors, a combination of the previous two.

The procedures used were: (1) review the literature, (2) develop a set of materials for classroom teachers, (3) develop an instrument used to measure concepts and applications, (4) work with the teachers, (5) collect the test data, (6) analyze the data, (7) formulate conclusions and recommendations.

The conclusions stated that when cognitive gains were desired, classroom instruction was the more beneficial method of instruction. However, it was not superior in learning application of said environmental principles. The most superior method for learning both cognitive and applications of environmental concepts, according to Howie, was combination of both indoor and outdoor practices.

DOES OUTDOOR EDUCATION PROVIDE AND PROMOTE AN INCREASED CONCEPT OF SELF-AWARENESS AND SELF-ESTEEM ALONG WITH THE OTHER AREAS OF THE AFFECTIVE DOMAIN IN THE INDIVIDUAL STUDENT?

Chase, Craig C. "Changes in Attitude Toward Outdoor Education by Teachers and Administrators After Participation in the Cooperative Outdoor Education Project, Title III, E.S.E.A." Diss. Univ. of Southern Illinois 1969.

Chase's dissertation had a twofold purpose. One was to determine the changes in attitude, if any by administrators and educators, towards outdoor education and its usefulness and value in an educational setting. The second purpose was to develop and evaluate a set of criteria used to determine the effectiveness of an outdoor education curriculum and program.

Posttesting of all participants showed a significant positive change in their attitudes towards the use of outdoor and environmental education. The questionnaire entitled, Outdoor Education Inventory, proved to provide an adequate and complete evaluation as to the effectiveness of any outdoor education program.

Berry, Christine. "Effects of a Resident Outdoor School Experience upon Behavior of Selected Fifth Grade Students." Masters Thesis. Pennsylvania State University 1973.

Berry's major purpose of the study was to assess the effects of week long instruction at a resident outdoor school on the behavior of disruptive students in the classroom. The hypothesis tested was that disruptive children would behave better as a result of the experience. The effect of the program was limited to the aspects of behavioral change as measured by the Devereaux Elementary School Behavior Rating Scale and the Peterson-Quay Behavior Problem Checklist.

A three week lead up program was taught to three different groups with the fourth week of on-site instructional activity taking place at the Stone Vally Outdoor School. Both a control group and an experimental group were established to provide comparison data.

Based upon the findings of Berry's collected data, it was found that an ROE (resident outdoor experience) can positively influence certain behavioral problems. It was also concluded that the specific type of educational method used by the instructor can influence the behavioral outcomes of an ROE.

Fletcher, Sarah Ann. "A Comparison of Affective Changes Between Economically Disadvantaged and Advantaged Sixth Graders at a Resident Outdoor Education Program." Diss. Indiana Univ. 1973 (Eric Document Reproduction Service No. Ed 129 549)

Fletcher's comparison between economically advantaged and disadvantaged sixth graders encompassed three different areas. Self-reliance, cooperation in a group setting and the transfering of positive values back to a classroom setting were the objectives established.

After spending only five days at camp, the findings did show that: 1) The majority of the students were more self-reliant and self-assured. 2) Cooperation moderately improved among the groups. 3) The transfer of positive values back to the classroom were only moderately successful. 4) More positive social values were gained because of the positive student responses stating desires for a longer camp stay, more new friends, and the response of the majority wanting to return to camp.

Noeske, Nancy Rae. " A Comparitive Study of the Effects of Different Instructional Treatments on Elementary Pupils' Attitudes Toward the Urban Environment." DA. 35 (1974), 4273A (University of Maryland)

This comparitive study dealt with the effects of different instructional treatments on fifth graders and their attitudinal changes, if any, toward the urban environments of today and of the future. Four different classes were randomly assigned to four treatment groups, with the field trips designed to provide the students with a three hour encounter of their natural environments and their relationship to it.

The conclusions of the studies showed that the teachings had no effect on the students' attitudes towards the cities of today, however, there was a more optimistic outlook of the attitudes of the students toward the cities of the future. The field trips also showed a more positive effect on the attitude scores than did the other areas of learning.

Coons, Ernest M. "A Two Week Resident Camp Offering the Primary Objective of Predetermined Attitude Change for Early Adolescents." Diss. University of New Mexico 1973.

Coons' study was developed around the concept of attitudinal changes, with the development of positive attitudes toward school, and the development of a more positive self-concept, the major areas of concern. Predetermined attitudinal changes for the participants were compared with the results of participants in a twelve day camp program. The hypothesis used for the study was the null hypothesis.

Tests used to measure the levels of significance and statistical analysis were the Chi-Square Test for Two Independent Samples, and the Median Test. Subjective analysis by Coons of the sociometric-nomination ratings also added support.

A brief summary of the findings stated that more positive attitudes were achieved by the experimental group of students than the control group. Both groups benefited from their outdoor educational experience, but Coons found that a camp offering predetermined attitudinal change objectives could be developed to enhance a students concept towards the self and others.

Bailey, Rupert. "Outdoor Education for Experience Enrichment." Journal of Outdoor Education 13 (1978): 20-23

In developing an enrichment experience that revolved around the experiences of Outdoor Education, the faculty of Chinle Boarding School in Arizona developed eight objectives for their camp experience. Curriculum and lesson plans were developed according to the available staff's skills, talents and interests. Incentive for cooperation and group effort was provided by means of a "coup stick". Clans earned points for participation in activities and projects.

No formal means of evaluation was designed, but both students and staff felt the experience successful and beneficial with noted positive affective changes. A continuation of the program was being considered.

Acuff, Daniel Stewart, Ph.D. "The Effect of an Outdoor Education Experience on the General and Intercultural Anxiety of Anglo and Black Sixth Sixth Graders." DA. 36 (1976), 728A (University of Southern California)

Stewart's investigation, based on a set of nine hypotheses, was to determine the anxiety level of three hundred twenty-six Anglo and Black sixth graders. These students represented two Southern California school districts.

An adaptation of Children's Manifest Anxiety Scale was given in both pre and post assessments both before and after the outdoor camping experience. The population sample consisted of three groups, A,B, and C, comprising one hundred thirteen Anglo sixth grade camp participants, one hundered thirteen Black sixth grade participants, and one hundred thirteen Anglo non-participating sixth graders.

The conclusions based upon the findings of the investigation purported that: A) Black sixth graders appeared to have a greater anxiety level than their sixth grade Anglo peers, B) the outdoor educational experience led to a decrease in anxiety for most students, and C) the Black student's anxiety level decreased more, leading Stewart to hypothesize that an outdoor educational experience had a greater impact on that group.

Weatherly, Mark. "The Opinions of Parents Regarding the Change in Attitudes, Concepts, and Personal Adjustment of their Sons Through Personal Counseling at Summer Camp." DA. 32 (1972), 4364A (University of Virginia)

The purpose of this dissertation was to obtain the opinions of parents in noticing the changes in their son's attitudes that could be attributed to the summer camp experience. A personal interview, along with a questionnaire, was the major evaluative instrument for this project.

Weatherly's findings did conclude that a positive and beneficial influence was reflected in the areas of emotional conflicts, and general development and underdevelopment in school. The majority of parents believed that the experience did have a positive effect on their sons.

Marks, Reita Jean, Ed.D. "A Comparison of the Effectiveness of Group Camping Experiences on Change of Self-Concept for Campers with Professional and Non-professional Group Leaders." DA. 32 (1971), 3693A (West Virginia University)

This study was concerned with measuring the change of self-concept and the concept of ideal self as a result of participation in a camp experience designed to promote and enhance self-understanding. Seventh and eighth graders from seven rural counties in West Virginia were used for the population sample.

Raw data were obtained from scores which were administered before, immediately following and ten weeks following the camping experience. Analysis of variance was used to determine significance of difference for the variables of residence, sex, and 4-H membership.

Findings indicated a significant lowering of the campers Discrepency scores as a result of the field experience. Conclusions were made that the professional and non-professional group leaders were effective in facilitating self-concept change.

Millward, Robert E., D.Ed. "The Influence of a Resident Outdoor Program on the Attitudes of Sixth Grade Students Toward Outdoor Concepts Using Two Teaching Methods." DA. 35 (1973), 106A (Pennsylvania State University)

The intent of Millward's study was to determine the effect that an outdoor programs positive influence had on sixth graders attitudes toward outdoor attitude concepts. Both teachers and students were randomly assigned to experimental and control groups.

The students were administered an outdoor attitude inventory test one week before camp, one week after camp and then three months later. Analysis of the data centered on the student attitude scores and direct observations with mean attitude scores compared using an analysis of variance formula.

Millward's conclusions did find that overall attitudes were significantly more positive in both teaching groups with no significant differences between the experimental and control groups. Further analysis of the inventory's four sub-categories also revealed a significant positive change in environmental and socialization attitudes.

Andrews, Dorothy Maud. "Effect of a Values Oriented Environmental Education Unit on the Attitudes of Pre-Service Teachers and on Their Students." DA. 40 (1979), 3216A (Boston Univerasity)

Andrew's dissertation had two purposes. One was to see if preservice elementary teachers changed their attitude toward environmental issues as a result of participating in a values-oriented environmental educational unit. The second premise was to see if their students changed their attitudes toward the environmental concepts as a result of their teachers instruction.

The control group received the regular curriculum courseware for CH301 at Boston Univerasity, while the experimental group received a values-oriented environmental unit. The instruments used both pretest and posttest were the Environmental Assessment Instrument I which included nineteen personal data questions, a forty-five item cognitive test to measure attitudinal changes, and a semantic differential of sixteen environmental concepts.

Andrew's findings showed a significant positive attitudinal change in elementary teachers as a result of the instruction. There was also the added benefit of the teachers imparting a positive attitude of the environment to their students.

Becker, Lenere Marcia. "The Effect of the Resident Outdoor Experience on Attitudinal Change Toward Environmental Change Toward Environmental Issues." DA. 38 (1977), 4566A (University of Northern Colorado)

Becker determined whether a Resident Outdoor Experience had any significant attitudinal changes in sixth graders towards environmental issues. Becker compared an experimental group with outdoor and indoor classes to a control group with just classroom experience.

The students were taught concepts involved with the environment, interdependence, natural resources, pollution, and human impact. Three hundred sixty sixth grades from Santa Cruz County, California participated in the program.

Becker concluded that the experimental group displayed a significant positive attitudinal change in the concepts of conservation and human impact on the environment. There was no significant difference shown in the concept areas of environment interdependence and pollution.

Carlson, Marcia K. "A Study of the Influence of a Resident Outdoor Education Experiences on Intermediate Level Children's Perception of Peers and Perceptions of the Out-of-Doors." DA. 34 (1972), 1159A (Syracuse University)

Carlson sought to determine the effect that an ROE had on a group of fourth through sixth graders towards their perceptions of the out-of-doors and their peers. Carlson addressed three questions in the affective domain.

The instruments for gathering data were given as pre and post tests to one experimental group and to two control groups over a three week period. The fourth week was spent by the experimental group at a resident outdoor camp with follow-up testing the next week.

The findings of the study were contrary to expectations as no significant differences were found between the control and experimental groups. Some of the reasons cited for possible failure were: 1) too brief of a time at camp, 2) possibly inadequate testing instruments, and 3) the possibility of some unknown variable affecting the results. Carlson felt that further research chould be conducted to determine the effect of age, sex, I.Q., and socio-economic status on perceptions of peers and the environment.

WHAT EVALUATIVE STANDARDS AND METHODS ARE USED TO ASCERTAIN THE EFFECTIVENESS OF AN OUTDOOR EDUCATIONAL PROGRAM?

Bennett, Dean Birchard. "The Development of a Model to Evaluate the Attitudinal and Behavioral Goals of K-12 Envrionmental Education." DA. 33 (1972), 4785A (University of Michigan)

Bennett's purpose was to design a model to evaluate the attitudinal and behavioral goals of elementary and secondary environmental education. Bennett also wanted to evaluate the applications of the model with instruments and techniques contrived from it.

Basic to the model were three behavioral objectives pertinent to the concept of environmental education as a process involving: (1) discovery - inquiry, (2) evaluation problem identification, and (3) problem-solving. Related to nature, the role of man, self-concepts and social concept are the cognitive and affective variables. Skill variables relate to discovery-inquiry, evaluations problem identification and problem solving.

To test the application, specific operational behavioral objectives were derived from the model's basic objectives for three types of evaluation: (1) process, (2) formal, and (3) unobtrusive. These provided the core for development of both pretest and posttest instruments.

After development, the model was then used in a teaching situation with seventy-five middle-school students enrolled in a two week environmental education course. These students were given two pretests with the same two tests given later as posttests.

Analysis of the results showed significant positive changes in two variables. Both control and experimental groups were equal at the implementation of the study but the experimental group showed a greater difference in affective changes toward nature, knowledge and the role of man. Bennett concluded that the environmental educational model can provide a basis for designing evaluative instruments and techniques.

Ciesla, Kathryn Grace. "The Development and Evaluation of a Self-Instructional Learning Guide for use at an Outdoor Educational Area." DA. 35 (1974), 5147A (Ball State University)

Ciesla's study involved the development and evaluation of an effective self-instructional learning guide which would help the student study the environment in a natural setting. The study was administered to Ball State University students at the Wildlife Preserve in Muncie, Indiana.

Five experimental and two control groups were pretested and posttested to evaluate cognitive gains. The five experimental groups walked along a marked trail on the Wildlife Preserve with copies of the learning guide and performed the activities described in the guide for each station.

To ascertain the effectiveness of the program, pre and post tests were written, given, and analyzed using the t-test to determine the gains in cognitive learning. The comparison of the pre and post test results showed a mean gain of 2.7 points for the experimental group while the control group showed a mean gain of .69.

The evaluation of the study showed that an effective curriculum for outdoor education can be developed and implemented with positive results. The use of such an instructional guide can result in a measurable cognitive gain in the understanding of environmental concepts and was perceived as a worthwhile activity by those involved.

Eastman, Thomas Walton. Ph.D. "The Development and Validation of an Environmental Attitude Measure with Predictive Validity." DA. 35 (1973), 905A (University of Maryland)

Eastman's research was to determine whether overt behavior could be predicted from attitude measurement, and if so, could such measures be used to evaluate affective educational success.

Two fifteen hour environmental teaching units dealing with the issue of litter pollution were developed. One unit utilized a teacher-centered approach while the other was a student-centered indirect approach. The assessment instrument consisted of a Semantic Differential with thirteen concepts. The attitude measures were pilot tested for reliability and validity.

Evaluation of the groups by comparison of posttest data showed no measurable advantage in either teaching method. Attitudinal changes were also minimal.

Fleming, Glenn A., Ed.D. "An Examination of the Relationships Between the Intents and Outcomes of a Resident Outdoor Education Experience." DA. 34 (1973), 2716A (Northern Illinois Univ.)

Fleming's study examined the relationship between teacher's intent prior to an outdoor educational experience with students and the outcomes upon completion of the experience as reported by the teachers and students involved. The sample involved four intermediate grade teachers and their students.

The data for the study were collected by a series of scheduled standardized interviews. A congruency model was designed to examine the relationship between what a teacher intends and what actually occurs in an instructional program.

Fleming's conclusions implied a number of suggestions for the planning of an outdoor education experience. The most basic is that a high degree of student input prior to the experience and a sharing of the responsibilities between teacher and students would enhance the value of any outdoor educational program.

Hartung, John Vernon. Ph.D. "An Evaluation of an Experimental Stress-Challenge Environmental Education College Course." DA. 34 (1973), 5738A (Southern Illinois University)

Hartung's study evaluated a course designed to blend the Outward Bound process with environmental education. The study included work at the outdoor laboratory and presentation in such areas as resource conservation, environmental perspectives, human dynamics, and cultural awareness. Hartung's expectations were to increase the student's awareness of themselves and their natural environment.

Three evaluation instruments were utilized to quantitatively measure the change of the students involved. Two of the instruments, the Environmental Preference Survey and the Test of Environmental Comprehension, were developed for the study and the third instrument, The Personal Orientation Inventory, was developed previously.

Hartung showed that the environmental preference of the participants was changed significantly toward the awareness of environmental problems, individual's effect on these problems, and the awareness of the deteriorating state of the environment. There was also a significant change in the relationship between environmental preference and comprehension. The results seemed to indicate a more positive man-environment relationship and a learning transfer as a result of the significant increase in cognitive and affective comprehension.

Kalla, Joseph Adam. Ph.D. "An Evaluation of an Interdisciplinary Program in an Elementary Teacher Education Curriculum." Diss. University of Wyoming 1972, (ERIC Document Reproduction Service No. ED 075 115)

The purpose of Kalla's study was to determine the effects of an Interdisciplinary Outdoor Education Program by determining changes in student attitudes and values. Treatment of the experimental group was attained by participation in a four day off-campus outdoor educational experience. One pretest and two posttests were given with the evaluative instrument being the Education Attitude Index.

After conclusion of the study, Kalla found that the program contributed significant and favorable changes in the participants attitudes on three of the four developed scales. The program did not alter nor effect attitudes concerned with student to student relationships. Positive changes were both short and long term, with some regression occurring when students reentered the classroom. The control group showed less favourable attitudes.

Keown, Herald Duane. Ed.D. "The Development and Evaluation of a Curriculum for the Blue Mountain Environmental School." DA. 35 (1974), 1962A (Ball State University)

Keown developed and evaluated a usable natural environmental curriculum incorporating cognitive and affective components of learning outdoors. This curriculum was developed and tested on thirty-two high school boys and girls, three full time instructors, and guest instructors from varying government agencies and businesses. The curriculum was designed around the premise that learning is an emotional as well as an intellectual experience.

Evaluation of the project was obtained by utilizing taped interviews, a fifty question multiple choice test on concepts, and a questionnaire mailed to the parents of the students involved. Achievement of the goals was determined by measuring student attainment of performance objectives.

Conclusions based upon the data obtained confirmed that the objectives and goals of the curriculum were met with the exception of one goal: provide the student with information necessary for them to play an effective role in solving environmental problems. This goal was not fully achieved.

Leith, Sylvia Gillespie. "The Development and Evaluation of an Elementary Environmental Attitudes Program" DA. 34 (1973), 5590A (University of Texas, Austin)

Leith based her dissertation on the premise that a program for teaching an environmental education program would effect changes in student's attitudes toward the environment. A second purpose was to develop a system of instruction whereby student teachers could effectively teach such a program to their prospective students.

Evaluation of the program was based upon the results of pretests and posttest of the Semantic Environmental Concern Inventory. The Questionnaire on Environmental Problems was also used for evaluation of the program.

The results did show that both students and student teachers did show some affective changes with regard to the environment. Differences in attitude change of the students seemed to vary based on which classes the child was in, the topic studied, and the schools the student attended. No relationship was found between the use of the instructional strategies and the attitude change of the children. Time limitation also seemed to be an important factor since more than three to four weeks of the study was needed to affect an attitude change of any significant degree.

Simmons, John B., Ed.D. "An Evaluation of Value Clarification with Respect to Ecological Achievement and Attitudes." DA. 35 (1974), 5953A (University of Northern Colorado)

Simmons study was designed to test the effectiveness of value clarification-techniques in relation to the development of achievement in ecology and affective attitudes toward ecology, biology and science. One hundred twenty-one students were taught ecology using traditional methods of instruction while one hundred forty-one students were taught with the use of value clarifying methods.

Both groups were pretested with: (1) Syracuse Environmental Awareness Test, (2) Affective Domain Measuring Scale, (3) Schwirian Science Support Scale, and (4) Survival of Man Scale. Both groups participated in the twenty-six day ecology unit.

The comparison of adjusted posttest scores showed that both groups did exhibit a positive gain with respect to attitudes and achievement. Difference between the two groups on the achievement test were not large enough to be significant, however, the control group did show a greater gain score on the ecology attitude scale.

Weiss, Iris Rosfield. Ph.D. "The Development and Evaluation of a Self-Instructtional Environmental Education Program for Elementary Teachers." DA. 36 (1974), 236A (University of North Carolina at Chapel Hill)

The development and evaluation of a course of study to improve elementary school teachers cognitive and affective attitudes towards environmental education was the basis of Weiss' dissertation. Weiss proposed that elementary teachers are, in general, unprepared to teach science to their students.

A self-instructional environmental package containing eight modules dealing with the basic concepts of ecology was developed with each module consisting of a cassette recording, a series of instructional pictures, and a list of suggested student activities. The modules each dealt with a different aspect of our environment and the biosphere.

All thirty-four volunteer teachers were pretested and posttested with the Test on Environmental Science. The Test of Attitudes Toward Teaching Science was also used as a means of evaluation. This test was given as a posttest.

The results of the project did show teachers to be more knowledgeable about the environment among those who completed the course, and also showed a more positive attitude towards the environment among the same group. The self-instructional package did also prove to be an effective means in helping teachers to learn environmental concepts and principles.

Weiss concluded that a self-instructional model did seem to be a viable means for improving both cognitive and affective knowledge among the teachers who were willing to take the time to finish the modules.

Wilcox, Dwaine R., "An Analysis of the Effectiveness of Outdoor Education Technique as Measured by the Iowa Test of Educational Development." DA. 38 (1976), 1869A (Virginia Polytechnic Institute and State University)

Wilcox study was based on the comparison of the effectiveness between traditional educational techniques and outdoor education techniques in increasing a student's cognitive knowledge in Language Arts, Math, Science, and Social Studies. Comparisons were made using the Iowa Test of Educational Development, which was given as both a pretest and a posttest.

After a semester of instruction, it was found that the experimental group acquired a significantly greater amount of cognitive knowledge in Language Arts, Math, and Science. There was no difference between the two groups in the area of Social Studies.

Wileman, Joseph L., Ed.D. "The Extent and Nature of Affective and Cognitive Changes in Teachers and Students as the Result of Participation in an Environmental Education Program." DA. 36 (1975), 5008A (Virginia Polytechnic Institute and State University)

Wileman investigated the affective and cognitive changes in both teachers and students participating in an Environmental Educational Project funded by the National Science Foundation. The project was conducted in Prince William County, Virginia.

The Environmental Semantic Differential was given to the groups of fourth, fifth, sixth, and eighth grade students as an attitude measure and a knowledge test. After analysis of the results, the test showed that the fourth and fifth grade treatment females scored significantly higher on the attitude measure than the other groups.

Overall results proved effectiveness of an environmental education program in both affective and cognitive skills. The semantic differential test proved to be a valid instrument when used to measure students' attitudes toward the environment.

SUMMARY

The majority of the research does support the need for utilizing the outdoors as a classroom in the areas of outdoor education, ecology, and environmental education. However, research of the positive effects on the cognitive domain proved to be inconclusive with some of the research citing significant positive gains and other research citing no differences in the two instructional modes. Significant affective differences were cited by almost all of the research.

All research studied seemed to indicate that some form of outdoor education should be implemented with constant evaluation as an ongoing process. The studies indicated a beneficial aspect of the programs even though some modifications were needed.

Peck and Morton showed that the outdoors was an effective tool in teaching positive cognitive and affective environmental concepts. While not only being an effective tool, Ciesla found that an outdoor educational curriculum and curriculum guide resulted in measurable cognitive gains in understanding environmental concepts. Chrouser's studies concurred by showing that outdoor education provided significant positive differences in the areas of science and technology, the interaction with society, the nature of scientific enterprise and the social responsibilities of science and scientists.

The use of standardized testing also helped to substantiate the premise that cognitive gains can be improved with the use of an outdoor experience. DeBlanc reported that achievement test scores, for outdoor education students, were significantly higher in science than those of students who participated in the standard classroom instruction. Marcus found that even a student's reading level, when measured by achievement tests, can markedly improve when the student partakes of an outdoor education program with specific intents and objectives. Wilcox found that an outdoor educational program could not only improve science achievement but also math and language arts cognition.

In contradiction to the above studies, Konle's research showed no significant positive differences in the cognitive domain except with the exception of a few students who scored markedly higher than the other members of the experimental group. This represented a difference from the previous studies in that this study was the first of four to deviate from the assumption that an outdoor educational program can improve cognitive skills more than the traditional classroom setting.

Westcott and Brady showed that there were no significant differences in either the control or the experimental group as a result of the instruction be it indoors or outdoors. This concurred with Eastman's

research that there is really no advantage to either type of instructional mode. While agreeing with Eastman, Johnson's conclusions showed that the best form of instruction should be consistant, either indoors or outdoors, not a mixture of the two.

In complete contrast to Johnson's study, was the two different research projects done by Howie and Hosley. Howie and Hosley showed that an intertwining and utilization of both learning areas, indoors and outdoors, provided the most postive cognitive gains in student instruction and achievement.

While the results differed from the cognitive domain in showing a relationship between the outdoor and indoor methods of instruction, the affective studies were more favorable in their confirmation of the original questions being researched. The majority stated that outdoor education was the more favorable means of instruction when a more positive affective behavior was desired.

Acuff's research on decreasing the anxiety levels of Anglo and Black students was typical of the achievements of an outdoor educational program. Acuff found that an ROE was extremely beneficial in developing positive affective changes in both Black and Anglo groups. Bailey's study was in agreement with Acuff's in that affective gains could be significantly increased towards the positive spectrum by inclusion of an outdoor educational program. While not only

decreasing the anxiety level of students, Berry found that the behavior of disruptive students could be positively influenced with the inclusion of an outdoor educational program. Not only did disruptive behavior decrease but there was less worry over academic achievement, and an increase of the attention span.

Weatherly, Coons, Marks, and Fletcher all reported significant positive affective gains with students being more self-reliant, self-assured, cooperative, and more positive with regards to social-emotional and environmental concepts. Not only were the immediate affective areas influenced by an outdoor educational instruction, Noeske found that her students had even a more optimistic outlook in regards to their futures.

While most of the research tended to deal with the areas of student concern, Chase's dissertation showed that teachers and administrators, after completion of an ROE, were more positive towards the use of outdoor and environmental education. Andrew's study showed the same relationship in that preservice teachers showed significant positive attitudinal changes as a result of outdoor educational instruction. Not only was there an increase in the cognitive knowledge, there was also the added benefit of imparting the newly acquired attitudes towards the environment to their students.

While imparting a new found respect for the environment, an outdoor educational program could also influence students and faculty to have a positive

attitude for the concepts of conservation and the impact that man has on their environment. Becker concluded that a significant gain in these areas were measured as a result of an ROE progam. Environmental awareness and concerns for the causes of environmental disequilibrium are areas that were strongly influenced by the teachings of an outdoor educational program.

While encouraging and developing new feelings for the environment and teaching new concepts and objectives about the outdoors, outdoor educational programs were evaluated in many diverse and varied ways. While all research except Simmons and Eastman showed strong relationships between positive learning and outdoor instruction, different methods of evaluation were utilized to ascertain the effectiveness of each program. Standardized tests, questionnaires and in-house designed evaluative instruments were all used to ascertain the effectiveness of an outdoor program.

Leith utilized the Semantic Environmental Concern Inventory to evaluate the effectiveness of outdoor education in the affective realm while Weiss used two tests, the Test on Environmental Science and The Test of Attitudes Toward Teaching Science, to evaluate as to whether or not development of a self-instructional model was a viable and workable means for teaching and improving environmental concepts and skills.

Kalla utilized similar methods by using the Education Attitude Index to evaluate the changes in student attitudes. Fleming purported utilizing teacher and student input along with a sharing of the responsibilities to enhance the value of any outdoor educational experience. Keown designed his curriculum around the premise that learning was an emotional as well as an intellectual experience.

Bennett, Ciesla, and Keown, all developed questionnaires, tests and either taped or used personal interviews to evaluate the effects that an outdoor educational program had on learning and what changes could be implemented to the stated curriculums for future improvement and development. These methods of evaluation were all instructor developed.

In contrast were the methods used by Wilcox, Marcus, Konle, and Brady. Their research was evaluated for effectiveness by utilizing standardized achievement tests. Some of the tests used were the Iowa Test of Educational Development, the Metropolitan Achievement Test, and the Iowa Silent Reading Test. Data collected from the results of these instruments tended to support the premise that an outdoor educational program could have significant positive effects on both the affective and cognitive domains.

CONCLUSION

DOES OUTDOOR EDUCATION PROMOTE AND DEVELOP A MORE SOLID AND FUNDAMENTAL GRASP OF THE CONCEPTS THAN A SIMILAR ENVIRONMENTAL CURRICULUM TAUGHT IN A TRADITIONAL CLASSROOM SETTING?

Research in the cognitive areas of outdoor education seemed to be inconclusive as to whether a student attained a more fundamental grasp of environmental concepts. Approximately sixty percent of the research studied indicated significant improvements among the students who participated in an ROE while about forty percent of the research found no major discernible differences in their students achievement. (See Appendix A) Studies did seem to indicate that a more condusive atmosphere to learning was promoted by an outdoor educational curriculum because of the enthusiasm of the students and the uniqueness of the instructional setting. Students interests and responses were deemed to be more varied and frequent.

Possible reasons for the discrepancies in the research could be attributed to a lack of set standards, procedures, objectives or evaluative methods for comparing and contrasting student achievement. Teacher enthusiasm and instructional style could also have had a significant influence on a student's achievement and cognitive gains.

More studies and research would seem to be needed before any conclusions could be drawn as to whether a student does grasp concepts and fundamentals better in

an outdoor educational learning system as opposed to the traditional setting. However, based upon students, parents, and instructors responses, an outdoor educational program did seem to promote more enthusiasm for learning.

DOES OUTDOOR EDUCATION PROVIDE AND PROMOTE INCREASED CONCEPT OF SELF-AWARENESS AND SELF-ESTEEM ALONG WITH THE OTHER AREAS OF THE AFFECTIVE DOMAIN IN THE INDIVIDUAL STUDENT?

From the research collected and studied, there seemed to be a consensus that an ROE could promote a more positive influence on the affective areas of a student. (See Appendix B) More responsibility, increased self-awareness, increased self-esteem, lessened anxiety, and more cooperation among peers were just some of the areas in which research has shown major positive gains. Behavioral and attitudinal problems all decreased significantly when an ROE program was implemented. Self-reliance and an increase in the positive social values were the result of almost all outdoor educational programs.

Teachers should implement some kind of an ROE, if only for the fact that the affective domain in students would be improved and strengthened. The affective area seems to be the emotional state that governs a student's motivation to learn most significantly. As Castillo had written. "The affective domain is the heart and soul of the learning experience, just as the

cognitive domain is the thinking intellectual part. They are directly interrelated. The cognitive domain stimulates the affective domain, and, once the child is involved in affective experiences, new cognition arises."[1] Outdoor education has a positive effect on increasing the student's affective areas. A student's cognition is bound to increase when a significant effort is made to increase a student's affective domain.

WHAT EVALUATIVE STANDARDS AND METHODS ARE USED TO ASCERTAIN THE EFFECTIVENESS OF AN OUTDOOR EDUCATIONAL PROGRAM?

While research did seem to indicate a strong predisposition as to the positive benefits of educating students in an outdoor curriculum, evaluative and educational procedures seemed to vary considerably from one study to the next.(See Appendix C) Standardized tests, attitude tests, in-house designed tests, questionnaires, and taped interviews were all utilized to evaluate both cognitive and affective areas of the curriculum.

While the majority of the research tended to extol the benefits of implementing an outdoor educational program because of the positive benefits it had on a student's cognitive and affective domains, evaluation of said curriculums seemed suspect in setting certain standards and criteria for evaluation. Reliability and validity of self-developed evaluative instruments are

sometimes questionable. Designing and modifying accurate tests for use in evaluation of curriculums and student achievement is a difficult task. "Evaluation should not be viewed as a collection of techniques; but, it is a 'process', a continuous process that underlies all good teaching and learning."[2]

When developing an outdoor education program, certainty and clarity in the concepts, objectives, and processes must be established and then evaluated. We must answer the questions: Why are we taking our students outside? What do we want them to learn? What concepts or processes are we trying to teach them? Going outside for just the sake of going outside is not a clear and definable objective.

Constant improvement and adapting of an outdoor curriculum is needed to ensure that relevant and pertinent material is being taught to the students. Outdoor education can be a wonderful learning experience for students of all ages, however, some form of consistant and reliable means of evaluation should be developed or adapted to ensure that the experience is meaningful and the stated objectives of the curriculum were being met and attained.

RECOMMENDATIONS

1. More research be done to ascertain whether an outdoor educational experience has a more positive impact on the cognitive domain of a student than the traditional classroom setting.
2. More outdoor and environmental educational programs be developed and implemented not only by elementary, middle and high schools, but also by the colleges and universities.
3. Teachers and administrators be given in-service training to promote a more positive change in attitudes toward outdoor education and its usefulness and value in an educational setting.
4. A standard or adaptive standard of evaluative instruments in both the cognitive and affective domains be developed or utilized to ascertain as to whether modifications, improvements, or objectives need to be implemented.
5. Clear and definable objectives, concepts and processes should be developed before implementation of any outdoor educational program. In other words: What are we trying to teach our students?

APPENDIX A

Comparison of Cognitive Gains

Research	Significant Cognitive Difference	No Significant Difference
Acuff		
Andrews		
Bailey		
Becker		
Bennett		
Berry		
Brady		X
Carlson		
Chase		
Chrouser	X	
Ciesla	X	
Coons		
DeBlanc	X	
Eastman		X
Fleming		
Fletcher		
Hartung	X	
Hosley	X	
Howie		X
Johnson		X
Kalla		
Keown	X	
Konle		X
Leith		
Marcus	X	
Marks		
Millward		
Morton	X	
Noeske		
Peck	X	
Simmons		X
Weatherly		
Weiss	X	
Westcott		X
Wilcox	X	
Wileman	X	

APPENDIX B

Comparison of Affective Gains

Research	Significant Affective Difference	No Significant Difference
Acuff	X	
Andrews	X	
Bailey	X	
Becker	X	
Bennett	X	
Berry	X	
Brady	X	
Carlson		X
Chase	X	
Chrouser	X	
Ciesla		
Coons	X	
DeBlanc		
Eastman		X
Fleming	X	
Fletcher	X	
Hartung	X	
Hosley		
Howie		
Johnson		
Kalla	X	
Keown		
Konle		
Leith	X	
Marcus		
Marks	X	
Millward	X	
Morton	X	
Noeske	X	
Peck	X	
Simmons	X	
Weatherly	X	
Weiss	X	
Westcott	X	
Wilcox		
Wileman	X	

APPENDIX C

Evaluation Instruments

Research	Title
Acuff	Children's Manifest Anxiety Scale
Andrews	Environmental Assessment Instrument I
Bailey	No evaluation instrument
Becker	Semantic Differential (no title given)
Bennett	not available in abstract
Berry	Devereaux Elementary School Behavior Rating Scale and Peterson-Quay Behavior Problem Checklist
Brady	not available in abstract
Carlson	The Guess Who Inventory, The Concept Factor Scale, and Selected Outdoor Pictures
Chase	Outdoor Education Inventory
Chrouser	not available in abstract
Ciesla	in-house tests
Coons	in-house developed rating scales Guess Who sociometric technique
DeBlanc	Metropolitan Achievement Test
Eastman	Semantic Differential (no title given)
Fleming	Standardized interviews
Fletcher	All About Me Scale, Norwicki-Strickland Locus of Control, and Pre & Post Camp Questionnaires
Hartung	Environmental Preference Survey, Test of Environmental Comprehension, & The Personal Orientation Inventory
Hosley	in-house developed retention test
Howie	in-house developed instrument
Johnson	teacher made tests
Kalla	Education Attitude Index
Keown	Taped interviews, Multiple choice test Questionnaires mailed to parents
Konle	Iowa Silent Reading Test
Leith	Semantic Environmental Concern Inventory Questionnaire on Environmental Problems
Marcus	Metropolitan Achievement Test
Marks	Adaption of Index of Adjustment & Values Personal Data Questionnaire
Millward	Millward-Ginter Outdoor Attitude Inventory Test Forms A & B
Morton	Millward-Ginter Outdoor Attitude Inventory Test
Noeske	Two part Semantic Differential
Peck	not available in abstract
Simmons	Syracuse Environmental Awareness Test, Affective Domain Measuring Scale, Schwirian Science Support Scale, & Survival of Man Scale

APPENDIX C cont.

Weatherly	Questionnaire, Personal Interviews
Weiss	Test on Environmental Science, Test of Attitudes Toward Teaching Science
Westcott	Ohio State University Environmental Knowledge and Attitude Surveys
Wilcox	Iowa Test of Educational Development
Wileman	Environmental Semantic Differential

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